PATENT ABSTRACTS OF JAPAN

(11)Publication number :   10-164550

(43)Date of publication of application : 19.06.1998

(51)Int.Cl.	H04N 7/167
	H04H 1/00
	H04L 9/08

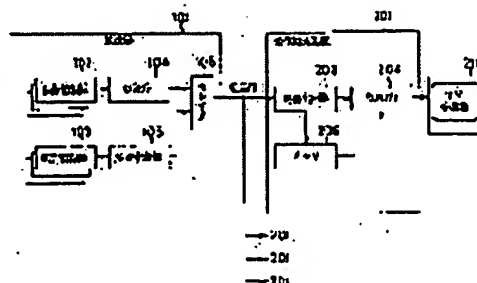|	
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(54) SCRAMBLE SYSTEM, BROADCASTING STATION DEVICE AND RECEIVING TERMINAL DEVICE

(57)Abstract: .

PROBLEM TO BE SOLVED: To positively promote the joining of a sponsor by ensuring the viewing of advertizing information inserted to a program, so as to improve an advertizing effect.

SOLUTION: A broadcasting station 101 gives scrambles to video information (program) selected from video information source 102 by a scrambler 104, multiplexes a key for descrambling advertizing information selected by advertizing information source 103 by a multiplexer 105 and sends video information and advertizing information by arbitrarily switching with a selector receiving terminal devices 201 respectively extract a key for descrambling a key extraction circuit 203 from the advertizing period of the program to store into a memory 206. Then through the use of this key, a descrambler 204 descrambles the program.

LEGAL STATUS

[Date of request for examination]   21.03.2001

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than
the examiner's decision of rejection or
application converted registration]

[Date of final disposal for application]

[Patent number]   3585679

[Date of registration]   13.08.2004

[Number of appeal against examiner's
decision of rejection]

[Date of requesting appeal against examiner's
decision of rejection]

[Date of extinction of right]

[Detailed Description of the Invention]

[0001]
[Field of the Invention] This invention relates to the scramble method which sponsors a program cheaply by adding advertising information for image information in offer by package media, such as offer and LD (laser disc) in broadcast media, such as terrestrial broadcasting, satellite broadcasting service, and CATV (cable television), CD-ROM, DVD (digital video disc), and a videocassette.

[0002]
[Description of the Prior Art] the analog TV broadcast using [the movement toward many channelization of TV broadcast is activating the provider of the public address system (hardware), and the provider of the contents of broadcast (software) in recent years by progress of trust / commission broadcast system made disengageable and the digital compression technology represented by MPEG 2, and] a broadcasting satellite or a communication satellite -- in addition, multi-channel broadcast digital [TV] using a communication satellite is being realized.

[0003] Moreover, from a thing called the re-broadcast to the area which a ground wave does not reach in CATV, service is expanded to a viewer by the service and many channelization which employed bidirection, such as a video on demand and TV shopping, efficiently, and a status is established as one media.

[0004] On the other hand, in terrestrial broadcasting, the gestalt from the former called NHK and commercial broadcasting does not change, but current is keeping the status as main broadcast voice.

[0005] An eye is turned about the contents of broadcast and accounting in these various media here. As everyone knows, although the broadcast subscription fee is collected from the viewer who NHK installed the receiver and did the reception contract about terrestrial broadcasting, since commercial broadcasting is realized with the income by the advertisement inserted into the program, it is not charged to the viewer.

[0006] On the other hand, in BS broadcast, the dues of a subscription rate and every month are collected from the viewer, and CS broadcasting is also the charged broadcast to which a tariff is fundamentally collected from a viewer. [NHK] [WOWOW / a broadcast subscription fee and] CATV is a gestalt of terrestrial resending + charged broadcast, and has become the structure which collects from a viewer the audience fee gold of the subscription rate gold set as several steps, a channel unit (paper channel), or a program unit (paper view).

[0007] In order to enable viewing and listening of the charged broadcast except NHK only for a contractor, a scramble is usually given to a program. The viewer who made a

contract of tariff payment descrambles, views and listens to the program scrambled using reception and this key in the key for descrambling from a broadcasting station.

[0008] Thus, when it is going to view and listen to all the channels and programs to which are charged broadcast fundamentally except terrestrial commercial broadcasting, it is common that the tariff set up about viewing and listening of one program like a channel unit or pay-per-view is charged as for audience fee gold, and it can view and listen, audience fee gold will swell greatly.

[0009] Therefore, even if CM enters like the commercial broadcasting in current terrestrial broadcasting, the demand of wanting you to make a tariff cheap also exists, and it is possible [it] to make a tariff cheap inserting CM for the program such originally sponsored as charged broadcast.

[0010] However, since a viewer does not want to see CM but a fall of a tariff is only desired, even if it inserts CM into a program simply, the period of CM is switched to other channels and considered [not seeing CM in many cases and].

[0011] For this reason, if a viewer views and listens to CM and an effect of advertising is not guaranteed, the sponsor of such service cannot gain but has the trouble that implementation of this service [itself] becomes difficult.

[0012]
[Problem(s) to be Solved by the Invention] When the purpose of this invention inserts CM in a pay program in view of the above trouble and it sponsors a program by the low price, it is guaranteeing CM viewing and listening of a viewer, raising an effect of advertising, and promoting a sponsor's entry positively.

[0013]
[Means for Solving the Problem] In order to attain the above-mentioned purpose, this invention has the next configuration.

[0014] Namely, in the scramble method which scrambles on the image offered through broadcast or a storage, while invention according to claim 1 scrambles on said image It prefaces or inserts, said image is provided with the advertising information which multiplexed the key for canceling said scramble, and the key multiplexed by said advertising information at the time of playback of said image is extracted, and let it be a summary to cancel the scramble of said image using this key.

[0015] In the scramble method with which invention according to claim 2 restricts reception of television broadcasting moreover, from a broadcasting station side While scrambling to the image or voice of a television program The advertising information which multiplexed the key for canceling said scramble is inserted into said television program, and is broadcast. In a receiving side The advertising information inserted in said

television program is received, and said key multiplexed by this advertising information is extracted, and let it be a summary to cancel the scramble of said television program using this key.

[0016] Moreover, in a scramble method according to claim 2, in case invention according to claim 3 inserts advertising information on multiple times into one television program, it makes it a summary to change the key for canceling a scramble for every insertion of advertising information.

[0017] Moreover, it is broadcasting station equipment which carries out [that invention .according to claim 4 was equipped with the change means which changes a scramble means scramble to the image or the voice of a television program at arbitration, a selection means choose the advertising information on arbitration, a multiplexing means multiplex the key of which said scramble cancels to said selected advertising information, and the program to which said scramble was given and the advertising information by which said key was multiplexed by the timing and the frequency of arbitration, and] as the description.

[0018] Moreover, a receiving means for invention according to claim 5 to choose the channel of the television broadcasting of arbitration, and to receive, An extract means to extract the key multiplexed by the advertising information inserted in this received television broadcasting, It is accepting-station equipment which makes it a summary to have had a maintenance means to hold the key extracted by this extract means, and a descrambling means to cancel the scramble of the television broadcasting scrambled with said held key.

[0019] Moreover, while invention according to claim 6 broadcasts the program in which the scramble was given to an image or voice by the 1st channel It is the scramble method which multiplexes the key of which said scramble is canceled to advertising information, and is broadcast by the 2nd channel. By said 1st channel The control information which notifies said 2nd channel is multiplexed and broadcast in the program to which said scramble was given. By said 2nd channel The key of which said scramble is canceled is multiplexed and broadcast to said advertising information, and the key of which said scramble is canceled comes to hand with reference to said control information in a receiving side, and let it be a summary to cancel the scramble of said program.

[0020] Moreover, a scramble means by which invention according to claim 7 scrambles to the image or voice of a television program at arbitration, The 1st multiplexing means which multiplexes the control information which notifies the 2nd channel to the television program to which said scramble was given, The 1st modulation means which modulates the program by which said control information was multiplexed to the 1st channel, A storage means to memorize advertising information, and the read-out means which reads the advertising information on desired from said storage means alternatively, It is broadcasting station equipment which makes it a summary to have had the 2nd multiplexing means which multiplexes the key of which the scramble of said scrambled television program is canceled to said read advertising information, and the 2nd

modulation means which modulates the advertising information by which said key was multiplexed to the 2nd channel.

[0021] Moreover, a receiving means for invention according to claim 8 to choose the channel of the television broadcasting of arbitration, and to receive, An extract means to extract the control information which notifies the key and the 2nd channel which were multiplexed by this received television signal, A maintenance means to hold the key and control information which were extracted by this extract means, A descrambling means to cancel the scramble of the television broadcasting scrambled with said held key, It has the control means which controls each above-mentioned means, and changes. Said control means In order for the key of which the scramble of the television program broadcast by the 1st channel is canceled to come to hand, when it is necessary to receive the 2nd channel It is accepting-station equipment which makes it a summary to control to receive the channel of the 2nd ** based on said extracted control information, and to extract said key.

[0022] Invention according to claim 9 is set to accepting-station equipment according to claim 8. Moreover, said control means Next, while making said maintenance means continue maintenance of said key until an effective key is extracted When a receiving channel returns to the 1st channel again after changing a receiving channel from the 1st channel to the 3rd channel, The effectiveness of said key is verified, if effective, it will be used for scramble discharge as it is, and let it be a summary to control to receive the 2nd channel again and to extract said key, if not effective.

[0023] Invention according to claim 10 is set to accepting-station equipment according to claim 8 or 9. Moreover, said control circuit When the effective key of which the scramble of the 1st received channel is canceled is not saved in memory, A receiving means is controlled to receive the 1st channel and let it be a summary to make a descrambler cancel a scramble, after making said receiving means receive the 2nd channel, making an extract means extract the key multiplexed by the advertising information on this 2nd channel and making memory memorize.

[0024] Moreover, invention according to claim 11 is set to accepting-station equipment given in any 1 term of claim 8 thru/or claim 10. The display-control means on which it displays discounting or changing audience fee gold into a free service by viewing and listening to advertising information when the pay program to which the scramble was given is received, It is accepting-station equipment which makes it a summary to have had further an input means to input the selection result of whether a viewer views and listens to advertising information, or not to carry out, and the accounting control means which performs accounting based on said inputted selection result.

[0025] In the scramble method with which invention according to claim 12 restricts reception of television broadcasting moreover, from a broadcasting station side While scrambling to the image or voice of a television program at arbitration The information containing the data for constituting the key and advertising information for canceling said scramble is multiplexed and broadcast in this television program. In a receiving side

While constituting and displaying advertising information based on the data for constituting the advertising information which received said television program and was multiplexed by said television program Said multiplexed key is extracted and let it be a summary to cancel the scramble of said television program using this key.

[0026] Moreover, a scramble means by which invention according to claim 13 scrambles to the image or voice of a television program at arbitration, A storage means to memorize the data for constituting advertising information, and the read-out means which reads alternatively the data which constitute the advertising information on desired from said .storage means, A multiplexing means to multiplex the information which contains the data for constituting the key and advertising information for canceling said scramble in the television program to which said scramble was given, It is broadcasting station equipment which makes it a summary to have had a modulation means to modulate said multiplexed television program.

[0027] Moreover, a receiving means for invention according to claim 14 to choose the channel of the television broadcasting of arbitration, and to receive, An extract means to extract the data for constituting the key and advertising information for canceling said scramble multiplexed by this received television broadcasting, A maintenance means to hold the data for constituting the key and advertising information which were extracted by this extract means, It is accepting-station equipment which makes it a summary to have had the display-control means on which advertising information is constituted and displayed, and a descrambling means to cancel the scramble of the television broadcasting scrambled with said held key, based on the data for constituting said advertising information.

[0028] Invention according to claim 15 is set to a scramble method according to claim 2. Moreover, said television program It is the program of the method on demand broadcast according to the demand from a viewer. When the effective key of which a scramble is canceled is not held, distribution of a television program is halted. Let it be a summary to broadcast advertising information, when a viewer is provided with selection of whether advertising information is received or for a tariff to be paid and to receive and the former is chosen, to broadcast a television program, when the latter is chosen, and to charge.

[0029] Invention according to claim 16 is set to claim 2 or a scramble method according to claim 3, 6, or 12. Moreover, said scramble Or it is the scramble which performs block encryption. the encryption which adds a pseudo-random-number sequence to said television program -- and -- Or the key of a block cipher is used as the 1st key. the initial value of this pseudo-random-number sequence -- and -- Encipher the information which identifies the 1st key and said program with the 2nd key with an updating period longer than this 1st key, and the 1st encryption data is generated. Let it be a summary to encipher the information about the 2nd key and corresponding accepting-station equipment with the 3rd different key for every accepting-station equipment, to generate the 2nd encryption data, to multiplex the 1st encryption data in said television program, and to multiplex the 2nd encryption data to said advertising information.

[0030] The image and voice of TV program which extracted the descrambling information by which multiplex was carried out to CM period by the receiving side by scrambling the image and voice of TV program in a broadcasting station side, carrying out multiplex [of the information containing the key for descrambling this] to the period of CM, and broadcasting by the same channel as TV program or different channel in this invention by the above-mentioned configuration, and received are descrambled.

[0031] In [operation] this invention, while inserting advertising information (it abbreviates also to CM hereafter) in image software instead of having an advertiser (sponsor) offer some costs (or all) of image software, the key of which a scramble is canceled in this CM is multiplexed. and a viewer or the purchaser of image packaged software -- a tariff -- being cheap (or no charge) -- the key of which a scramble is canceled comes to hand by viewing and listening to CM instead of becoming.

[0032] Since viewing and listening of CM is guaranteed and it counts upon a positive sponsor's participation by this, low-pricing of charged broadcast or image packaged software is attained.

[0033]
[Embodiment of the Invention] Next, the gestalt of operation of this invention is explained to a detail with reference to a drawing. In order that a pay program may enable viewing and listening only to the viewer who pays a tariff, a scramble is usually given to a program. The viewer (or he promised to pay) who paid the tariff descrambles, views and listens to the program scrambled using reception and this in the key for descrambling from a broadcasting station. This invention is a system which I have the sponsor of CM offer the costs of a program a part (or wholly) by inserting CM, and mitigates a viewer's tariff burden. That is, it is the main point of this invention to receive the key of descrambling by viewing and listening to CM instead of a viewer paying a tariff (a tariff being made cheap).

[0034] Drawing 1 is a principle explanatory view which makes television broadcasting an example and explains the principle of this invention. In this drawing, the broadcasting station 101 which is the provider of image software is equipped with the selector 106 which changes the image information source 102, the advertising information source 103, the scrambler 104 that scrambles to image information, the multiplexer 105 which multiplexes a key to advertising information, and image information and advertising information.

[0035] Two or more accepting-station equipments 201 are equipped with the key extract circuit 203, the descrambler 204 which cancels a scramble, and the memory 206 for memorizing a key, respectively, and the output of a descrambler 204 is connected to the television set 210.

[0036] Moreover, the transmission line which connects a broadcasting station 101 and two or more accepting-station equipments 201 does not ask a cable and wireless. That is,

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which transmission line of CATV, terrestrial broadcasting, or satellite broadcasting service is sufficient.

[0037] Setting to drawing 1 , a broadcasting station 101 scrambles by the scrambler 104 to the video signal and sound signal of a program which were chosen from two or more image information sources 102, such as VTR and a raw image from a television camera. Moreover, CM by which CM of the sponsor who sponsors a program was chosen from two or more advertising information sources 103, the key of which a scramble is canceled in this CM was multiplexed with multiplexer 105, and the key was multiplexed by the selector 106 in front of a program or in the program is inserted and broadcast.

[0038] Accepting-station equipment 201 receives broadcast, extracts the key of which the scramble multiplexed during this CM period is canceled by the key extract circuit 203, and memorizes it in memory 206. And a descrambler 204 cancels the scramble of the program scrambled using this memorized key, and outputs it to the TV receiver 210.

[0039] Thus, since the descrambling-during CM period key is multiplexed, if you are going to watch the scrambled program, a viewer cannot change during CM period to other channels, but has to continue this channel. By this, viewing and listening of CM will be guaranteed.

·[0040] Drawing 2 is a notional block diagram by the side of the broadcasting station for explaining the 1st operation gestalt of this invention. The image information source 102 of plurality [set to this drawing and / broadcasting station / 101], such as VTR and a raw image from a television camera, The scrambler 104 which scrambles to the advertising information source 103, and the video signal and sound signal for every sponsor, The multiplexer 105 which multiplexes the key of which a scramble is canceled to the video signal of advertising information, and the control code mentioned later, The selector 106 which changes a program and advertising information, and the modulator 109 which a predetermined subcarrier is modulated [modulator] with the output of a selector and generates a broadcast wave, It has the timing generating circuit 108 which generates the timing of multiplexing in multiplexer, and the change in a selector 106, and management equipment 107 which controls these equipments that constitute a broadcasting station.

[0041] Suitable information is chosen among two or more image information sources 102 by the selection signal from management equipment 107, and one program consists of broadcasting stations 101. When this program is sponsored as a pay program, a scramble is given to management equipment 107 for a video signal and a sound signal by the scrambler 104, and it is usually outputted to a selector 106 by control at it.

[0042] Here, when this program is a pay program sponsored at a low price by CM insertion, a program sponsor's CM used in that program is chosen from two or more advertising information sources 103, and it outputs to multiplexer 105. In multiplexer 105, the key and control data for solving the scramble of the above-mentioned pay program are multiplexed at the blanking period of the video signal of CM, and it outputs to a selector 106. The format of teletext broadcast or a caption may be used for this

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multiplexing approach.

[0043] The data multiplexed here consist of the five fields shown in drawing 25 , and consist of each field, such as a synchronous code for taking the synchronization of the data generated burstily, a control code which shows the attribute of the data following a degree, CH related information, key data, and parity for error detection. In addition, the detail of a control code is shown in drawing 32 . For example, in control-code = "00000001", it is shown that multiplex [of the key] is carried out.

[0044] The timing generating circuit 108 generates the multiplexing timing of multiplexer 105, and the change timing of a selector 106 on the basis of control of management equipment 107, and supplies them to each. CM is inserted to one program at a rate predetermined by the selector 106, and it is become irregular and broadcast by predetermined TV channel through a modulator 109. The control flow chart of this management equipment is shown in drawing 16 .

[0045] According to drawing 16 , a program is first chosen from the image information source 102 by selection directions of management equipment 107 (step S101). Subsequently, it is judged whether it scrambles in this program (step S103).

[0046] When scrambling, it is judged whether it is CM numbering group (step S105), and if it is CM numbering group It is judged whether it is CM period (step S107), and if it is CM period Choose CM from the advertising information source 103 (step S109), and a scramble is set as OFF in a scrambler 104 (step S111). A key is multiplexed in CM with multiplexer 105 (step S113), CM is chosen by the selector 106, it becomes irregular with a modulator 109, and CM is outputted (step S115). Subsequently, it judges whether it is program termination (step S117), and if it has not ended, it returns to step S107.

[0047] In the judgment of step S105, if it is not CM numbering group, the same accounting management processing as usual is performed (step S123), Scramble ON is set up in a scrambler 104 by control from management equipment 107 (step S125), and this program will be outputted until a program is completed (step S129) (step S127).

[0048] In the judgment of step S103, if it is the program which does not scramble, the scramble of a scrambler 104 is set as OFF (step S131), and this program will be outputted until a program is completed (step S135) (step S133).

[0049] Next, the configuration of the receiving side corresponding to this 1st operation gestalt is shown in drawing 3 . The channel selection circuit 202 which accepting-station equipment 201 chooses a desired channel from many channels inputted from a transmission line, and carries out a channel selection recovery in drawing 3 , The selection circuitry 211 which chooses and outputs the signal or external input signal from the channel selection circuit 202, The key extract circuit 203 which extracts the key and control code which were multiplexed at the blanking period of the video signal of CM period, It has the memory 206 which memorizes this key and control code, the descrambler 204 which cancels a scramble using this key, a digital disposal circuit 205,

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the copy guard circuit 212, the remote control receiver 208, and the terminal control circuit 207, and is constituted.

[0050] Moreover, there are the TV receiver 210 and a remote control transmitter 209 in a receiving side in addition to this. Here, accepting-station equipment 201 shows the case where it is out of the TV receivers 210, such as a set top box of CATV, and an accepting station of satellite broadcasting service. It is also possible to build this in the TV receiver 210 with a natural thing.

[0051] Next, actuation of this accepting-station equipment 201 is explained. First, a viewer chooses a channel to view and listen using the remote control transmitter 209, when there is a program to watch. If the remote control receiver 208 receives this, this will be told to the terminal control circuit 207, and the terminal control circuit 207 tunes in the channel which controlled the channel selection circuit 202 and was specified, and outputs it to a selection circuitry 203. The circuit which restores to the channel selection of a channel, the video signal of the tuned-in channel, and a sound signal is included in this channel selection circuit 202. A selection circuitry 211 is a transfer device with an external input, and when inputting from other equipments, such as VTR and DVD, it is changed.

[0052] The video signal and sound signal to which it tuned in and restored in the channel selection circuit 202 are inputted into a descrambler 204 through the extract circuit 203. The extract circuit 203 extracts data from the blanking period of a video signal, and if a synchronous code as shown in drawing 30 is detected, it will perform actuation which writes the information following a degree in memory 206.

[0053] The terminal control circuit 207 controls a descrambler 204 to be able to descramble the pay program to which the scramble was applied using the key which came to hand after detecting that the key had been transmitted based on the control code stored in memory and completing CM. Signal processing of the output of a descrambler 204 is carried out so that it can output to external TV by the digital disposal circuit 205, it goes into the TV receiver 210 through the copy guard circuit 212 further, and the program which it descrambled on the screen projects it.

[0054] The control flow chart of the terminal control circuit 207 in this case is shown in drawing 17 . In drawing 17 , if the terminal control circuit 207 receives a channel selection demand from the remote control receiver 208, the control signal of a demand channel channel selection will be sent to the channel selection circuit 202 (step S141). Subsequently, if this program judges whether the scramble is given or not (step S143) and the scramble is not given, free processing is performed (step S157) and it ends.

[0055] If the scramble is given, it will judge whether it is CM numbering group (step S145), and if it is not with CM, charged processing will be performed and it will end (step S159). In addition, since it is the same as that of the conventional technique, the contents of charged processing are omitted.

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[0056] If it is CM numbering group, it will judge whether it is CM period (step S147), and if it is CM period, a data multiplex is extracted (step S149), a descrambler 204 is set as Descrambling OFF (step S151), and the key and control code which were extracted are stored in memory 206 (step S153). Subsequently, it judges whether the program was completed or not (step S155), and if it has not ended, it returns to step S147.

[0057] if there are not delivery (step S163) and a key in a descrambler 204 about the control signal of Descrambling ON in order to cancel a scramble using this, if it judges whether the key is stored in memory 206 in the judgment of step S147 if it is not CM period (step S161) and there is a key -- the control signal of the descrambling OFF to a descrambler 204 -- delivery (step S165) -- it moves to the step S155 both.

[0058] In this way, if an effective key is extracted out of CM period, viewing and listening of the pay program which it descrambled after CM termination will be attained.

[0059] In order that the need of receiving CM by making it such a system may arise and the effect of advertising by CM may go up, it will contribute to development of such service and will be further returned also to a viewer by the fall of a tariff.

[0060] Now, in this invention, the rate of CM to one pay program and the insertion frequency of CM can be set as arbitration, and are set up according to the charge of televising of a program, the audience fee gold of a program, and a viewer's tolerance.

[0061] This can be set up by control of the timing generating circuit 108 from the management equipment 107 of drawing 2 , and as the broadcasting hours of CM are shown, for example in the graph of drawing 4 , the more it makes [many] the amount of CM, the more, a tariff is made cheap, and when there are few amounts of CM, the gestalt of making a tariff high can be considered.

[0062] Moreover, about the insertion frequency of CM, as shown in drawing 5 , it roughly divides and two are considered. One is the approach of inserting CM just before a program like drawing 5 (a), although the time amount of CM is long, it is the configuration that CM does not enter into a program, and another is the configuration of dividing one program into a suitable time basis like drawing 5 (b), and putting in short CM among them. These are properly used by the broadcasting station side according to the contents of the program etc.

[0063] Furthermore, when inserting CM several times to one program in this way, it is effective in secrecy nature improving the CM by updating a key in a unit.

[0064] Hereafter, other operation gestalten of this invention are explained. Although the 1st above-mentioned operation gestalt explained the example in the case of being TV signal with which CM contains the same dynamic image as a pay program next, CM is transmitted for information with little amount of data, such as a text, as 2nd operation gestalt, and the example which constitutes and displays CM screen from such information

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by the receiving side is explained.

[0065] The configuration by the side of the broadcasting station of the 2nd operation gestalt is shown in drawing 6 . The differences with the 1st operation gestalt are that the advertising information source is not an image and a sound signal but text format, and that there is no selector 106 of a program and CM. The same sign is given about a thing with the same function as the other 1st operation gestalten, and functional explanation is omitted.

[0066] The data according to text data or it are provided as the advertising information source 103, and there is very little amount of data which constitutes one CM compared with the 1st operation gestalt supplied as image information. If this data could be described by script languages, such as JAVA, and uses such language, it will become possible to interpret a script by the terminal side and to display CM by animations, such as animation.

[0067] As an image program and CM are chosen by control of management equipment 107 like the 1st operation gestalt and it is shown in drawing 26 at the blanking period of the video signal of an image program, CM and a key are multiplexed with multiplexer 105 in the form where distinction of CM or a key was made with the value of a control code, and it is broadcast through a modulator 109.

[0068] The block diagram by the side of the terminal of this 2nd operation gestalt is shown in drawing 7 R> 7. The difference with the 1st operation gestalt is that the display-control circuit 613 and the mixing circuit 614 are added. Moreover, the same sign shall be given to the thing with the same function as drawing 3 , and it shall have the same function.

[0069] The control from a viewer's request to selection of a channel is the same as that of the 1st operation gestalt, and it differs in that even CM data are contained to the data extracted in the extract circuit 203. In the extract circuit 203, CM data and a key are extracted from a video signal, and it writes in memory 206.

[0070] The display-control circuit 613 builds CM screen by control of the terminal control circuit 207 using CM data stored in memory 206. This CM screen is a screen which interpreted and built the text display and the script language, and the display-control circuit 613 outputs this built screen to a mixing circuit 614, it controls a mixing circuit 614 and displays CM so that CM may be mixed in the program received at a moderate rate.

[0071] A descrambler 204 starts the actuation which receives an effective key like the 1st operation gestalt, and outputs the image and sound signal which descrambled to the mixing circuit 614. The control flow chart of the terminal control circuit in this operation gestalt is shown in drawing 24 .

[0072] According to drawing 24 , if the terminal control circuit 207 receives a channel selection demand from the remote control receiver 208, the control signal of a demand channel channel selection will be sent to the channel selection circuit 202 (step S341). Subsequently, if this program judges whether the scramble is given or not (step S343) and the scramble is not given, free processing is performed (step S345) and it ends.

[0073] If the scramble is given, it will judge whether it is CM numbering group (step S347), and if it is not with CM, charged processing will be performed and it will end (step S349). In addition, since it is the same as that of the conventional technique, the contents of charged processing are omitted.

[0074] If it is CM numbering group, a data multiplex will be extracted (step S351) and it will judge whether the control code of a data multiplex shows CM (step S353). If it is CM, CM screen will be built (step S365), CM screen is displayed (step S367), and subsequently, it judges whether it is program termination, and if it is not termination, it will return to step S351.

[0075] If a control code is not CM, a data multiplex will judge whether it is a key (step S355). If it is a key, save for making a note of a key (step S357), and it judges whether a key effective subsequently is in memory (step S359). The control signal of Descrambling ON to a descrambler 204 in order to cancel a scramble using this, if there is a key Delivery (step S361), If there is no key, the control signal of Descrambling OFF will be sent to a descrambler 204 (step S363), and it will move to the step S369 both.

[0076] By controlling control of a mixing circuit 614 by this operation gestalt, when adjustable [of display positions, such as a part, or rate of the whole screen or a screen] can be carried out to arbitration and a key cannot descramble CM by un-receiving, CM is displayed on a full screen, and from a degree, various methods of presentation, such as displaying on some screens, can be considered.

[0077] Drawing 8 is the block diagram showing the configuration of the broadcasting station in the 3rd operation gestalt of this invention. It is the point that a different point from the 1st operation gestalt multiplexes the descrambling key of the 1st channel in CM which sets up the 2nd channel from which the 1st channel it is broadcast that a pay program is differs, and is broadcast by this channel. For this reason, the multiplexer 711 which multiplexes a control code, and the modulator 710 for the 2nd channel are added to the 1st channel. The same sign is given to the thing with the same function as other drawing 2 , and it considers as each thing which has a function similarly.

[0078] With the multiplexer 711 in this operation gestalt, data as shown in drawing 27 are multiplexed at the blanking period of the video signal of a pay program, and it broadcasts by CH1 which is the 1st channel.

[0079] This data is a synchronous code, a control code, CH-ID (channel identification number), a scramble flag, a CM-CH use flag, and CM-CH, as shown in drawing 27 . It consists of each field of No. and parity. It is CM-CH, when CH-ID is the number of the

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channel itself it is broadcast that a program is, it is the flag which shows whether the scramble flag has required the scramble for this program, and shows whether a CM-CH use flag uses CM channel which is the 2nd channel and it uses CM of CM channel. The channel number used for No. is shown.

[0080] Moreover, the channel (referred to as CHk) which broadcasts CM multiplexes data as shown in drawing 2525 in CM chosen like the 1st operation gestalt, and is broadcast as a TV signal of CHk through a modulator 710.

[0081] Drawing 18 is a flow chart explaining actuation of the management equipment 107 of the broadcasting station of the 3rd operation gestalt, this drawing (a) shows the control system of CH1 by the side of program broadcast, and this drawing (b) shows the control system of CHk by the side of CM broadcast.

[0082] First, in drawing 18 (a), program selection is directed to the image information source 102, and the image and sound signal of the selected program are given to multiplexer 711 (step S171). Subsequently, an auxiliary data is made to multiplex with multiplexer 711 (step S173), and it judges whether it scrambles in this program (step S174). Subsequently, in scrambling, it sets the scramble of a scrambler 104 as ON (step S175), and in not scrambling, it sets the scramble of a scrambler 104 as OFF (step S176). Subsequently, a program is broadcast by CH1 (step S177), and after a program termination judging (step S178), if it is unfinished, it will return to step S177.

[0083] The control of the commercial channel of drawing 18 (b) is as follows. First, if it is judged whether the scramble is given to the corresponding program (step S181) and the scramble is not given, it ends without doing anything. If the scramble is given, it will be judged whether it is CM numbering group (step S183), and if it is not CM-numbering group, it will end without doing anything. If it is CM numbering group, CM will be chosen from the advertising information source 103, and its image and sound signal will be given to multiplexer 105 (step S185).

[0084] Subsequently, a key is multiplexed by CM with multiplexer 105 (step S187), an auxiliary data is multiplexed (step S189), and it becomes irregular with a modulator 109, and broadcasts by CHk (step S191). Subsequently, after a program termination judging (step S193), if it has not ended, it returns to step S185.

[0085] The configuration of the receiving side corresponding to this 3rd operation gestalt itself is the same as the 1st operation gestalt, and here explains it using drawing 3 . The control algorithm of the terminal control circuit 207 differs from the 1st operation gestalt fundamentally, and it is explained centering on here.

[0086] Supposing the demand which receives CH1 through the remote control transmitter 209 is advanced from a viewer like the 1st operation gestalt, the terminal control circuit 207 will control the channel selection circuit 202, CH1 will be made to receive, and TV signal of CH1 will be inputted into the extract circuit 203. The extract circuit 203 extracts the control data shown in drawing 27 from the blanking period of the video signal

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inputted, and stores it in memory 206.

[0087] It judges that the terminal control circuit 207 is the pay program of this invention which will make a tariff cheap with CM if both flags of both are set with reference to the scramble flag in the control data stored in memory 206, and the CM-CH use flag, and the channel selection circuit 202 is controlled, CHk is tuned in, and control which projects CM under broadcast with the TV receiver 210 by this channel is performed.

[0088] Then, shortly, the data by which multiplex is carried out into CM are extracted in the extract circuit 203, and it is stored in memory 206. Since data as shown in drawing 25 are multiplexed by CM, the data stored in memory 206 are key data in case the number of CH1 is in the channel number corresponding to CH related information.

[0089] If this key comes to hand, the channel selection circuit 202 will be controlled again, a descrambler 204 will be operated using the key which received and received CH1, and the pay program of CH1 which it descrambled will project on the TV receiver 210. This control flow chart is shown in drawing 19 . The inside of a dotted line becomes the processing when receiving a program with CM.

[0090] When the terminal control circuit 207 receives a channel selection demand (this is set to CH1) from the remote control receiver 208, the channel selection circuit 202 is made to tune in delivery CH1 for the control signal of CH1 channel selection according to drawing 19 (step S201). A channel selection of CH1 gives the recovery signal of CH1 to the extract circuit 203 through a selection circuitry 211. Subsequently, the extract circuit 203 extracts the data multiplexed by CH1, and they are CH-ID, a scramble flag, a CM-CH use flag, and CM-CH. No. is stored in memory 206 (step S203).

[0091] Subsequently, if it judges whether the scramble is given to this program by the scramble flag (step S205) and the scramble is not given, free processing is performed (step S221) and it ends.

[0092] If the scramble is given, it will judge whether it is CM numbering group with a CM-CH use flag (step S207), and if it is not with CM, charged processing will be performed and it will end (step S223). In addition, since it is the same as that of the conventional technique, the contents of charged processing are omitted.

[0093] If it judges whether the key is already stored in memory 206 if it is CM numbering group (step S209) and there is a key, in order to return a channel selection to CH1 (step S225) and to cancel a scramble, a descrambler 204 is set as Descrambling ON (step S227), it judges whether the program was completed or not (step S219), and if it has not ended, it will return to step S209.

[0094] It will be CM-CH if there is no key in the judgment of step S209. The channel number CHk of CM comes to hand by No., and the channel selection circuit 202 is made to tune in delivery CHk for the control signal of a CHk channel selection (step S211). A channel selection of CHk gives the recovery signal of CHk to the extract circuit 203

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through a selection circuitry 211. Subsequently, the extract circuit 203 extracts the data multiplexed by CHk (step S213), and descrambling is set as OFF (step S215), a note of a key is made and it saves 206, it judges whether the program was completed or not (step S219), and if it has not ended, it returns to step S209.

[0095] Next, the configuration of a broadcasting station in case two or more channels which make a tariff cheap with CM exist as a modification of this 3rd operation gestalt is shown in drawing 9 . To drawing 8 , in the modification of drawing 9 , the image information source 102, multiplexer 711, a scrambler 104, and a modulator 109 are formed two or more sets, and the suffix of a to n which shows each group is added to these signs. In addition, the same function shall be achieved to the component which has attached the same sign as drawing 8 .

[0096] Multiplex [of the auxiliary data] is carried out to the program broadcast by each channel of CHk from CH1 in a format of above-mentioned drawing 26 with multiplexer 711, and as multiplex [of the data shown in drawing 27] is carried out and CM channel (CHk) is shown in drawing 28 , sequential broadcast of the CMn is repeatedly carried out from CM1 corresponding to CHn from CH1.

[0097] Processing of a receiving side is completely the same as above-mentioned processing, according to the data which tuned in one from CH1 to n of channels, and extracted them from the video signal of the tuned-in channel, the channel selection of CM channel and the extract of data are performed, a descrambler 204 operates using the extracted key, and the program which it descrambled projects it on the TV receiver 210.

[0098] Now, explanation is further added about control of the terminal control circuit 207 in such a system. The key corresponding to each channel and each, updating time, etc. are recorded in memory like drawing 29 , and the key which received and received the channel of CM is held until it is received whether it is an effective new key.

[0099] That is, although a key will come to hand in the procedure of the above-mentioned example, it will record on memory and CH2 will be descrambled in the condition of having received CH1 from the initial state when CH2 needs viewing and listening of CM like CH1 supposing it switches to CH2 on the way, the case where it returns to CH1 after that is considered. If the expiration date of the key by which multiplex is carried out to the updating time of the key currently recorded in memory at this time into the pay program is compared and it has not passed over the expiration date, when using the key currently recorded in memory and having passed over the term, it is controlled to perform actuation from the acquisition procedure of a key again.

[0100] Moreover, the accepting-station equipment which operates in a procedure like the 3rd operation gestalt becomes realizable [a modification which displays this on a viewer], when switching a channel by the above-mentioned control and displaying CM by adding the display-control circuit 613 and a mixing circuit 614, as shown in drawing 7 . The flow chart of CM numbering group processing part of this modification is shown in drawing 20 . Since fundamental flow is the same as drawing 19 , only the part (equivalent

to a 209 or less step [of <u>drawing 19</u>] part) of CM numbering group processing is shown.

[0101] It is channel selection **** (step S233) about CHk which will be CM broadcast channel in the channel selection circuit 202 if in the case of CM numbering group an effective key makes a note, it is judged according to <u>drawing 20</u> whether it is stored in 206 (step S231) and there is no key. And it mixes to a video signal by the mixing circuit · 614, and a screen display of the CM screen built by the display-control circuit 613 based on the data which the extract circuit 203 was made to extract a data multiplex (step S235), and were extracted is carried out (step S235).

[0102] Subsequently, a descrambler 204 is set as Descrambling OFF (step S239), if a key is in a data multiplex, it stores in memory 206 (step S241), it judges whether it is program termination (step S243), and if it is not termination, it will return to step S231.

[0103] If there is a key in the judgment of step S231, the channel selection circuit 202 will be made to tune in CH1 (step S245), and a descrambler 204 will be set as Descrambling ON (step S247), it judges whether it is program termination (step S243), and if it is not termination, it will return to step 231.

[0104] A channel is switched in the middle of a program still as mentioned above, selection of whether when the key received until now becomes an invalid, CM is received again, or to pay, view and listen to a tariff is displayed on TV screen, and it also becomes possible to control based on the selection result of the viewer who received through remote control. This control flow chart is shown in <u>drawing 21</u> . Since fundamental flow is the same as <u>drawing 19</u> , only the part (equivalent to a 209 or less step [of <u>drawing 1919</u>] part) of CM numbering group processing is shown.

[0105] In <u>drawing 21</u> , if in the case of CM numbering group an effective key makes a note, it is judged whether it is stored in 206 (step S251) and there is no key, selection of whether CM is received again or to pay, view and listen to a tariff will be displayed on TV screen (step S253). A viewer looks at this screen, chooses [which carries out CM reception / or or] whether charged viewing and listening is carried out, and answers through remote control.

[0106] Subsequently, this response judges whether it is CM reception (step S255), and if the terminal control circuit 207 is CM reception, it [it] Make the channel selection circuit 202 tune in CHk (step S257), and the extract circuit 203 is made to extract a data multiplex (step S259). A descrambler 204 is set as Descrambling OFF (step S261), if a key is in a data multiplex, it stores in memory 206 (step S263), it judges whether it is program termination (step S265), and if it is not termination, it will return to step 251.

[0107] If there is a key in the judgment of step S251, the channel selection circuit 202 will be made to tune in CH1 (step S269), and a descrambler 204 will be set as Descrambling ON (step S271), it judges whether it is program termination (step S265), and if it is not termination, it will return to step 251.

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[0108] In the judgment of step S255, if it is not CM reception, accounting will be performed and it will move to step (step S267) S269.

[0109] Moreover, by making it the configuration which inserts data as the 1st operation gestalt is shown in drawing 10 and shown in drawing 26 with multiplexer 711, the charged broadcast usual by the terminal side or the charged broadcast with CM can be detected now, and various programs, such as a charge/no charge, can be broadcast now.

[0110] Next, the 4th operation gestalt which united the 1st operation gestalt and the 3rd operation gestalt is explained. This is made into an inserting-into pay program-CM which multiplexed key base, and multiplexes the same data also as the channel which broadcasts CM as a reserve.

[0111] The example of a configuration by the side of the broadcasting station in this 4th operation gestalt is shown in drawing 11 . The same sign is given to drawing 2 , drawing 8 , and a component with the same function as the component of each drawing of drawing 10 , and the overlapping explanation is omitted. Like the 1st operation gestalt, the program in which CM which multiplexed the key to the timing of arbitration was inserted is broadcast, and CM which multiplexed this key is broadcast by CHk as well as the 3rd operation gestalt at CH1.

[0112] It is the same as drawing 3 , the control approaches of the terminal control circuit 207 differ, and the configuration by the side of an accepting station shows this control flow chart to drawing 22 .

[0113] CH1 and CHk presuppose that CM and a program are broadcast by the array as shown in drawing 30 here. And since a key will not be transmitted until time of day B comes in this CH1 supposing a viewer chooses CH1 during a program period like the time of day A in drawing which is not during CM period, the scramble of TV signal which received CH1 can be canceled till time of day B.

[0114] Then, by switching a receiving channel to CHk temporarily, when CH1 is tuned in at time of day A, an effective key's coming to hand, while displaying CM-1 broadcast by CHk, and controlling to return to CH1, while CM-1 is completed, even when a program is the middle, a program can be received smoothly.

[0115] Now, in current, between the broadcasting station of a ground wave or a satellite, and each viewer, a two-way communication way is secured using a telephone, in addition to a telephone, a bidirectional channel is secured using an own cable in CATV, and the entrepreneurs who perform interactive broadcast have also increased in number. Service of the quiz show of viewer participation, a video on demand, etc. on demand is raised as an example of these broadcasts.

[0116] Next, the case where service of this video on demand etc. on demand is offered is explained as 5th operation gestalt. The difference with drawing 10 which shows the modification of the 1st operation gestalt has the composition that the communication

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controller 1101 was newly added, other configurations are the same as that of <u>drawing 10</u> , and <u>drawing 12</u> is drawing showing the equipment configuration by the side of the broadcasting station of the 5th operation gestalt, and they omit [they give the same sign to a component with the same function, and] explanation.

[0117] This CCE 1101 is equipped for example, with a telephone function, and performs communication link with each viewer, and communications control using the independent transmission line with a broadcast channel. In addition, it is desirable to use the channel of the same cable as CATV, without using a public line for a telephone, when a transmission line is CATV.

[0118] Moreover, <u>drawing 13</u> shows the configuration of the accepting-station equipment of this 5th operation gestalt, and has the composition that the communications control circuit 1201 was added to <u>drawing 3</u> , and other configurations are the same as that of <u>drawing 2</u> . This communications control circuit 1201 is equipped for example, with a telephone function, performs the communication link with a broadcasting station, and is used as the request and the interactive reaction which carries out a program pair of a program on demand.

[0119] Here, actuation of this operation gestalt is explained by making into an example the case where a viewer requests, views and listens to programs, such as a movie, by on demand one. A viewer tells a program request on demand to accepting-station equipment 201 through the remote control transmitter 209. The channel selection circuit 202 is controlled and a menu screen as first shown in <u>drawing 33</u> R> 3 is broadcast by the tuned-in channel so that the terminal control circuit 207 which received the request may tune in the specified channel. The program and the viewing-and-listening approach which are and a viewer wants to see using the remote control transmitter 209 for this to determine selection and the viewing-and-listening approach of a program are determined.

[0120] When viewing and listening to a program 101 by broadcast with CM here is chosen, the data in which this viewing-and-listening condition is shown are transmitted to a broadcasting station by the communications control circuit 1201. It broadcasts inserting CM which chose the program specified from the image information source 102, and carried out multiplex [of the key] into the program like the 1st operation gestalt when CCE 1101 by the side of a broadcasting station received this data, and by the receiving side, if broadcast of a program starts, processing shown in the 1st operation gestalt will be performed, and it views and listens to the requested program. The control flow chart by the side of the terminal of this operation gestalt is shown in <u>drawing 23</u> .

[0121] When a channel is switched on the way, a scramble stops moreover, solving, since a scramble cannot be solved unless it views and listens to CM also in this operation gestalt. Then, if it tells a broadcasting station side from a terminal side through the communications control circuit 1201 when it changes into such a condition, a program will halt, and a menu screen as shown in <u>drawing 34</u> is displayed. If it chooses viewing and listening to CM again here, and it will be resent from CM and those without CM will

be chosen, a program will be dealt with as a usual pay program.

[0122] When those without CM are chosen with the menu of this case and the beginning, while accounting management is performed with the management equipment 107 of a broadcasting station by the communication link of accepting-station equipment and a broadcasting station, by it, a key will be transmitted to a terminal side using this channel, and the display of the image and voice which descrambled using this key in the terminal side will be performed.

[0123] Moreover, it may be said that I do not want you to put in CM in the middle of a program as a demand from a viewer side depending on the contents of a program. In this case, although it cannot say that the time amount of CM becomes long in this case, and it switches to other channels by this invention although it is possible to broadcast CM to the beginning of a program, possibility of separating from before TV remains.

[0124] On the other hand, the data input from a viewer can be required like drawing 31 at the time of the arbitration of the period of CM, and a viewer can be made to view and listen to CM to some extent by broadcasting CM which carried out multiplex [of the key] to a data input being checked by the broadcasting station side through a two-way communication way.

[0125] Now, although the broadcast system has been explained so far, also to the software package which used archive media, such as VTR and DVD, this invention is effective and explains the one example as 6th operation gestalt.

[0126] The same sign is given to the thing with the same function as the equipment configuration Fig. of the broadcasting station which shows the equipment configuration of the manufacture firm which records a program on such media to drawing 14 , and is shown in drawing 10 , and explanation is omitted. In the manufacture firm 1301, a suitable program is chosen from the image information source 102 by control of management equipment 107 as well as the control in the 1st operation gestalt, and it scrambles to an image or voice by the scrambler 104. Moreover, the key which descrambles the image which scrambled by choosing suitable CM from the advertising information source 103, and voice is multiplexed, CM is inserted in a program by the timing and the frequency of arbitration by the selector 106, and it outputs to a recording device 1201.

[0127] This recording apparatus 1201 records the signal from a selector 106 on archive media, such as a videocassette and DVD, directly, or records it on a master tape. When a master tape is created, it copies to the videocassette further for marketing from this master tape, or the press original recording of DVD is created.

[0128] Thus, archive media, such as a manufactured videocassette and DVD, will pass along a distribution channel, and will reach a viewer's hand.

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[0129] The viewer who received these media is reincarnated by connecting with the external input which shows the output of the regenerative apparatus corresponding to each media drawing 3 . The processing in accepting-station equipment 201 is the same as the 1st operation gestalt, except that a selection circuitry chooses the signal of an external input, and it becomes possible to view and listen to the program recorded by viewing and listening to CM normally.

[0130] Even if especially an archive medium inserts CM without carrying out processing like this operation gestalt, since playback is left to a viewer, it may not be viewed and listened with a rapid traverse etc., and an effect of advertising becomes low. However, according to this invention, since it is surely viewed and listened, an effect of advertising goes up, thereby, a sponsor can also come to spend money on this service, and CM can provide a viewer now with such an archive medium at a low price.

[0131] Although the example which carries out multiplex [of multiplex / of a key] to the blanking period of a video signal so far has been shown, in BS broadcast, multiplex is carried out to the data packet in a sound signal, and in digital broadcast, multiplex is carried out to the field of the data packet of a stream, and it is transmitted to it. Thus, although the fields which carry out multiplex by media differ, any media can carry out this invention explained above.

[0132] Explanation is added for a while about a scramble system here. The key system currently used for drawing 15 by BS broadcast is shown.

[0133] At a broadcasting station 1401, a scramble is given according to PN which generates a video signal and a sound signal with the image scrambler 1403 and a speech scrambler 1404 by the pseudo-random-number (the pseudo-random number is hereafter abbreviated to PN) generator 1405, respectively. The initial value set as this PN generator 1405 is used as a scramble key Ks. This scramble key Ks is updated in 1 to about several seconds, enciphers this with the work-piece key Kw with a long updating period, and it carries out multiplex with multiplexer 1407. Furthermore, it enciphers with the peculiar key master key Km for every terminal, and similarly, with multiplexer 1407, multiplex [of the work-piece key] is carried out, and it is transmitted.
[0134] In a terminal unit 1402, the work-piece key Kw is decoded with a decoder 1418 using the master key Km, the scramble key Ks is decoded using the work-piece key Kw, the PN generator 1415 is operated using this scramble key Ks, and the video signal and sound signal which it descrambled are outputted from descramblers 1413 and 1414.

[0135] In the conditions-of-contract comparator circuit 1417, it checks that it is ability ready for receiving based on discernment of the contents of a contract decoded with the master key Km, and the program decoded with the work-piece key Kw.

[0136] It can apply to the key system in which this invention also had such a three-tiered structure, the key which carries out multiplex to CM period explained so far can be used as the key equivalent to the work-piece key Kw, and it is desirable that it is a key with an

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updating period long to some extent.

[0137] Thus, in BS broadcast of Japan, by this invention, a video signal can respond to any scramble method, although it is the scramble of PN addition method, is not based on scramble methods, such as block cipher systems, such as analog scramble methods, such as a sink compression method currently traditionally held with CATV etc., DES currently performed by digital broadcast, and multi 2, but is applied to the Rhine rotation and a sound signal.

[0138] For example, an image and the sources 102 and 103 of speech information are digital data, and it becomes applicable also to CS digital broadcast system by making a scrambler 104 into a block cipher system (multi 2).

[0139]
[Effect of the Invention] As explained above, according to this invention according to claim 1, by multiplexing the key for scramble discharge of the image software offered through broadcast or a storage at CM period Since the scramble of image software cannot be solved unless it views and listens to CM, CM viewing and listening in paid media with CM can be guaranteed, the sponsors who participate in the service which inserts CM in image software and is offered at a low price increase in number, and it is effective in finally tariff reduction becoming possible.

[0140] Moreover, by multiplexing in CM in which the key of which this scramble is canceled is inserted into a television program, while scrambling in a television program according to claim 2 thru/or this invention according to claim 5, in order for a key to come to hand, it is effective in CM viewing and listening becoming indispensable, raising CM audience rating, and promoting a sponsor's participation.

[0141] Moreover, in order to view and listen to a pay program, as the time of choosing the 1st channel is a program, when it is not CM period according to claim 6 thru/or this invention according to claim 10 Since it can view and listen to CM currently broadcast by the 2nd channel immediately, a key can come to hand, it can return to the 1st channel and a scramble can be canceled, without waiting for the next CM period inserted into the program, it is effective in keeping a viewer waiting being lost.

[0142] Moreover, according to this invention according to claim 11, the effectiveness that a viewer can be provided with the regulation charge of a pay program and selection of whether for it to view and listen to CM and to choose a low price from the regulation charge is done so.

[0143] Moreover, even if it is not during CM period, while constituting and displaying CM screen from the data for constituting CM multiplexed by the program broadcast channel according to claim 12 thru/or this invention according to claim 14 The effectiveness that acquisition of CM display and a key can be performed is done so, without [since the key multiplexed similarly can come to hand, without it uses other

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channels, and] keeping a viewer waiting.

[0144] Moreover, according to this invention according to claim 15, in the television program of a method on demand, it is effective in the ability to provide a viewer with selection of the regulation charge without CM, and CM and no charge.

[0145] Moreover, according to this invention according to claim 16, it is effective in the ability to use for transmission of the descrambling key of this invention the transmission system of the descrambling key currently used by the conventional BS broadcast.

NPL Search:

"STB authentication
CATV authentication subscriber
CATV authentication subscriber terminal
"authenticate the STB"
CATV FDM
multiplex "clear key"
multiplex "cleartext key"
multiplex "plaintext key"
multiplex key stream